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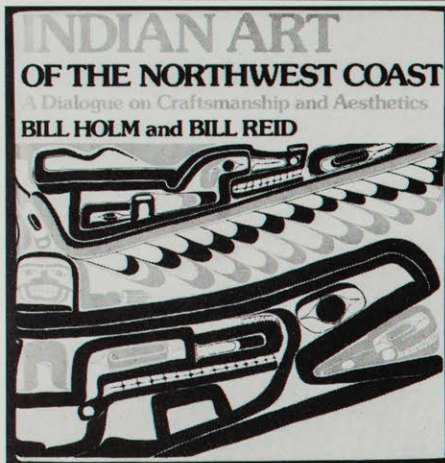
*J. Harris*



*J. Harris*



# Book Review



**INDIAN ART OF THE NORTHWEST COAST: A Dialogue on Craftsmanship and Aesthetics**, by Bill Holm and Bill Reid. Introduction by: Edmond Carpenter, University of Washington Press; 1976. \$20.00

"In the world today, there is a commonly held belief that thousands of years ago as the world today counts time, Mongolian nomads crossed a land bridge to enter the western hemisphere, and became the people now known as the American Indians.

"The truth, of course, is that the Raven found our forefathers in a clamshell on the beach at Naikun. At his bidding, they entered a world peopled by birds, beasts and creatures of great power and stature, and with them, gave rise to the powerful families and their way of life.

"At least, that's a little bit of the truth."

Art Books and books about art tend to be visually stimulating or verbally engaging but seldom ever both. **INDIAN ART OF THE NORTHWEST COAST** is both interesting reading, as the opening quote of this review suggests, and stunning to view.

Holm is a scholar of exceptional merit best known for his detailed analysis of motif and design. He is very careful about analysis and always qualifies himself which is a clue to the difficulty of probing into any art style.

Holm: "I'm going to play the most dangerous game in Northwest Coast art — interpretation. No one has ever successfully done it. Early anthropologists tried to get interpretations from the artists themselves, but got widely differing interpretations from everybody. That's all right."

The dialog format of this book has the effect of placing the reader into a natural and comfortable conversation with two remark-

able men. Bill Holm sets us up for this dialog but Bill Reid walks us through the spirit of the art, along a misty Pacific beach and into his Haida Heritage.

Reid is the artist and sees the world through artists eyes, but he is also the repository of the cultural information we are seeking from the art. He is the Indian, the one to whom the art speaks without a need to be sifted through the collander of culture. He sifts it well for us.

The book is beautifully illustrated with black and white plates of historical photographs and excellent color plates with views of the artifacts from many angles. Since the very essence of Northwest Coast art is its multi-dimensional aspect the publishers have wisely allowed multiple views of all of the objects. The logical next step in art publication will certainly be holography, not at all beyond the realm of possibility today.

Indian Art of the Northwest Coast is a marvelous book; a superb dialog between the two men who know this art best but there is a disturbing element which must be noted in Edmond Carpenter's Introduction. What we know of Northwest Coast art today is best credited to the private collectors, the surrealist artists who knew nothing of the culture but recognized the art for its own strength. "Anthropologists had lost interest in material culture and had never been interested in art". Nearly all surviving Northwest material culture is in private hands and most once carried museum numbers. "They left museums through sale, trade, gift, fraud, theft. Most came out of these museums at a time when curators traded freely, sometimes not even recording transactions. They felt free to do so because, until about 1955, this material had no more market value than seashells or beetles. Much of it wasn't even recognized as Indian by the general public, to whom 'Indian' meant what Frederic Remington painted."

Fortunately, museums today recognize the responsibility of their public trust and through the insights of authors like Holm and Reid are able to appreciate the need to conserve and protect these fragile and vanishing art forms.

**William B. Lee**, Curator of Anthropology, Natural History Museum of Los Angeles County.

## The Cover

Reproduction of two prints depicting Northwest Coast legends. At right is *Raven and the Whale Story*; left, *The Story of Bear Mother*.



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# Peoples of the Mist



by Elizabeth J. Wright

*Editor's note:*

*Much has been written about the physical aspects of Northwest Coast Indian life. In this article the author has given a new depth to our understanding by weaving in many of the authentic songs, legends and myths belonging to these "Peoples of the Mist".*

One of the most highly developed cultures among the North American Indians was that of the Pacific Northwest Coast. Although not agriculturists and classified as hunters and gatherers, the bountiful natural environment freed these people to develop a life superbly rich in artistic and ritualistic expression.

The ocean waters and streams yielded an abundant harvest including salmon, herring, smelt, the oil-rich olachen, halibut and flounder. Edible shellfish were there for the taking: clams, mussels, small abalone, oysters, limpets, crabs, sea urchins. Special canoes were constructed for hunting hair seals, sea lion, otter, porpoise, and whales. Land game consisted of caribou, elk, deer, black bear, and mountain goat. Flyways assured hunters of water fowl, while a variety of wild berries, bulbs, and roots grew in profusion.

Prior to the historical period it is estimated that approximately 150,000 American Indians lived on the narrow land-strip extending from Yakut Bay, Alaska, to Cape Mendocino, California. They were divided into numerous tribal groups and spoke many languages. However, because of the similar demands of the environment upon the inhabitants and their homogeneous response to those demands, the Northwest Coast is considered a distinct culture area.

*(continued)*

*Don't you ever, you up in the sky,  
Don't you ever get tired  
Of having the clouds  
between you and us?*

**The man stared, as though sightless, into the moist wall of fog. Inland the sky had been bright but when the time of Herring-Spawn-Moon approached the tribe had moved beside the seashore. The man smiled as he remembered the laughter of children scrambling into the red cedar dugout canoes, squeezing themselves and their toys between parents, aunts, uncles, cousins, household utensils and the greyed house timbers which served alternately as walls for their homes both in the cold places and the warm places.**

**You . . . you up in the sky . . . you in the rocks . . . in the trees . . . in the waters . . . in the clouds and in the sky . . .**

**The man vowed to cleanse and purify himself for the rituals ahead, to gain the good will of spirits which could grant an abundance of riches from the waters and the skies. Wild-Goose-Moon would bring so many geese, ducks and waterfowl that as they passed the sun seemed to grow sickly and hide from sight.**

**Getting-Ready-for-Whaling Moon meant rituals for the great creature which gave stomach-warming blubber, oil, skins. And then the man thought of the Salmon Moon.**

**As he tried to remember when he had first learned of the Salmon People the fog seemed to enter his head and mist over his memory. How often he had tried to imagine the lives of those Salmon People, people like himself yet who lived most of the year beneath the cold, restless waters.**



Steep, precipitous mountains on the mainland fringe the twisting shoreline. Tall stands of conifers forest the water's edge to timber line—Douglas fir, spruce, red cedar, yellow cedar, yew, and at the southern extension of the area, the coast redwood. Underfoot, ferns and mosses grow in profusion, all nourished by the mild temperature and heavy rainfall produced by the North Pacific current, commonly referred to as the Japanese current.

In this bountiful, natural setting splendid ceremonials, rich in drama, music and verse were performed time and time again. Although there was no written language prior to European contact and even today only linguists attempt to transcribe the complex grammar of the Kwakiutl, Tlinget, Haida and others, a rich oral tradition maintained and amplified the lore so that generation after generation knew in precise detail the songs, tales and verses all in celebration of the power of their natural world.



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**Beneath the stormy, dark depths were men and their wives and children who worked and played as he and his family worked and played. But at the coming of the autumn moon the Salmon People remembered the Land People and knew the Land People would need much food for the cold times ahead. Then, by some great magic, the Salmon People turned themselves into fish — choking and clogging the rivers and streams, offering themselves in ultimate sacrifice to the people on the land. No wonder the Chief, who caught the first salmon, made himself low before it with rituals and songs of gratitude. This honored guest must be received with dignity, and most importantly, his bones must be returned to the river. The bones of all salmon fish must be gratefully returned to the waters, for there in their deep, dark home the bones would magically turn back into the Salmon People who once again would live and play until the coming of the next cold time and their annual sacrifice.**

The throaty call of a raven pierced the thick fog. The man's heart was glad — a good omen. The raven, his own spirit guide, had spoken to him. It was with him in the fog, on the land, as it would be with him on the waters. He sent his voice out into the lifting fog:

*Oh, you, whose day it is,  
Make it beautiful.  
Get out your rainbow colors  
So it will be beautiful.*

Among the various woods offered by the natural environment the red cedar (*Thuja plicata*) served a multitude of purposes. Its wide, straight planks formed house beams and walls. The trunks could be carved into tools, storage boxes and totem poles. Shredded and softened the inner bark cradled the infant; worked into raincoats and woven robes it offered protection from the elements. Soft shredded cedar bark was useful as napkins. Checkerwork mats of red cedar strips functioned as tablecloths, mattresses or upholstery for seats. Ceremonial costumes were fashioned from this material as well as strong, flexible baskets and pouches. The bark was cut and stripped by means of a small adze.



*Look at me, friend!  
I come to ask for your dress,  
For you have come to take pity  
on us;  
For there is nothing for which  
you cannot be used . . .  
If you are really willing  
to give us your dress,  
I come to beg you for this,  
Long-Life maker,  
For I am going to make a basket  
for lily roots out of you.*

A random breeze stirred small branches and flicked the needles of the tall, young cedar. The woman, standing beneath it, continued her prayer:

*I pray you, friend, not to feel  
angry  
On account of what I am going  
to do to you.  
Take care, friend!  
Keep sickness away from me,  
So that I may not be killed  
by sickness or in war,  
O, friend!*





She lifted the adze, aimed it at the base of the tree, made the first horizontal cut then breathed in its fresh, strong odor. *You have come to take pity on us.* The words of the prayer ran through her mind. The cedar has come to give of itself to the people. Through many moons, fed by the sun and the rains, the cedar grows and becomes tall. The woman cut carefully. The bark yielded so readily it was a temptation not to strip more. But the tree, giving so willingly of itself, must not die. She will leave enough bark so it can recover and yield again.

As the woman peeled off the outer bark and rolled up the inner bark for ease in carrying home she thought of the basket to be made. She smiled. Hers were the finest baskets of the tribe. How patient her mother had been, taming a young child's fingers to the delicate task of weaving and twining the inner bark. Day after day she had worked at weaving strips into mats and baskets, then learned to spin the inner bark strips across her legs into stiff cord. It was her grandmother who had taught her to bury strips of bark in thick mud until they turned black, or to boil the strips in water with alder bark to make them red, and then to weave these into designs of owls, ravens or whales.

Even before she became a wife she could fashion open baskets for the storage of dried salmon, draining baskets for carrying shellfish and tightly-woven hats for the rain.

She remembered how proudly her father wore the rainhat she had woven — tight, perfect design, of twined bark cord and spruce root. Her youthful fingers, quick and eager, had surpassed her mother's skill.

Now she was teaching her own quick-fingered daughter these ways — the ancient ways of the women.

Among the Northwest Coast Indians the Shaman, as a result of a lengthy and tortuous quest, was believed to have powers bestowed by supernatural spirits. Both males and females practiced shamanism, except in the southernly area, where the practice was limited to women. The agonizing attainment of such healing powers conferred exceptional status to an individual regardless of his or her hereditary rank.

Illness was believed to be caused by witchcraft, by small, semi-animate objects which entered into the body, or by the loss of one's soul.

*I come to try to cure our friend  
That our poor friend may come back  
to life.*

*Oh, listen, our poor friend, to  
the means of healing . . .*

The old man heard the voice, stirred on his mattress of cedar bark. *I come to try to cure our friend.* It was the voice of the Shaman.

The old man opened his eyes. His wife, his sons and their wives . . . children . . . uncles . . . aunts . . . faces dim in the shadows of the oil lamps and fireplace were gathered around him. He must be very sick. His wavering gaze focused for a moment upon the Shaman — his wild tangle of hair, painted face and hands waving rattles of deer hooves. Then the Shaman faded from view. The years fell away and the old man remembered a boy at puberty, only son of a low-rank fisherman. The boy with hair dark as a raven's coat, eyes to match the bright glow of morning star, a boy deep in the lonely forest, near-drowning himself in the freezing waters, starving his body,





searching, seeking the spirit which would grant him the powers of the Shaman.

The boy had found the spirit. Across the old man's memory a shadow picture passed. His daughter lying pale and quiet . . . the Shaman using his blowpipe on her throat . . . then drawing out the evil spirit. And she was well again.

The old man revived, saw the swaying of those grouped about him as the Shaman's chant grew louder. The battle must be won against death. The old man, the Great-Canoe-Maker, must be rescued. The Shaman carried spirit rattles and charms but his strongest weapon against death was the Word. The Shaman's voice took on an urgency:

*Go on, our poor friend,  
Healed by the Magic-of-the-Ground  
and the Magic-of-the-Earth.*

The Shaman's assistants joined the chant, their voices entered into the old man's head. And now the healer whirled wildly about the cedar-bark mattress — his voice louder — louder — crying out in ecstasy to his supernatural spirits.

*Go on, poor one,  
Your throat will be able to sing  
the sacred song, our poor friend,  
For his name is Long-Life-Maker.*

The old man went with the ways of the voice then he heard no more. The Shaman had gone into the village to capture and bring back the old man's soul.

The sudden quiet, like the lifting of a fog, revealed the old man to himself as he once had been — the Great-Canoe-Maker. Lesser canoe makers had cut the knotty red cedar near the beach or edges of a stream to make launching easier. But he, he had searched in the dense forest for long, branchless bole — unknotted — straight and yielding. His fingers throbbed with the remembered feel of the adze as he formed and shaped the beam to proper thickness. Helpers would fill the opening with water made boiling with hot stones, but only he had the skill to drive open the softened wood and insert crosspieces to spread the hull, just to its limits, not more nor less. But his particular glory was in the carving of separate prow and stern pieces: a massive grizzly bear, the soaring head and wings of the raven, or the mighty thunderbird, the figures attached by carefully sewing with spruce withes through holes drilled along the edges of joints. Sewing so carefully done that few could even see the place of attachment. The Great-Canoe-Maker, sought by chiefs, even of other clans, honored at Potlatch, his family granted a crest.

A feeling such as ebb-tide flushed his mind clear. The Shaman would not recover his soul. It had strayed too far. The old man looked searchingly into the faces hovering above him. With his last breath he must chant what he felt in his heart.





*Farewell, O friends!  
For I am leaving you, O friends!  
a ye ha a, a ye ya ha, aye!  
O friends! do not take it too much  
to heart that I am leaving you,  
O friends!  
a ye ya ha a . . .  
O brothers! do not take it too much  
to heart that I am leaving you,  
O brothers!  
O sisters! do not feel sorrowful because  
I am leaving you, O sisters,  
a ye ya ha . . .*

**His voice grew soft. The faces above him saddened.**

*I was told by the one who takes care  
of me  
that I shall not stay away long,  
that I shall come back to you,  
O friends! a ye ya ha . . .*

*I mean, O friends! that you shall  
not feel too sorrowful when I  
leave you, O friends!  
a ya ye ha a, a ye ya ha, aye a!*

**The old man's voice grew light as a bird's feather. He was joining his soul on its journey toward the rainbow.**

Western man, being monotheistic, with the concept of a single godhead, has based his culture patterns upon mastery of nature, willing acceptance of change, and a desire for progress. The Indians of the Northwest Coast and numerous other cultures have been polytheistic, basing their ways of life upon cooperation with nature, preservation of successful culture patterns and a distrust of change.

To more fully appreciate the ways of life of the early Northwest Coast dwellers it is necessary for heirs of the western tradition to mentally "shift gears".

According to the ancient stories from the North Pacific Coast there was a "time before the world changed". During that time all animals spoke the same language, had the same form, but differed in what was known as *essence*. That *essence* expressed itself only in terms of what each animal was able to do or think — not in physical form.

Then came the time when that world changed. (It is thought by many that this refers to the West Coast Indians' understanding of the development of language.) At the time of that great breakup, animals moved into separate and uncommunicative physical forms. This included the emergence of man as another animal or manifestation of

## GENESIS

***Feeling lonely in the world, which was nearly empty, Raven one day moved down to the sandy beach, and there he wandered, forlorn. A fair sound came out of the wet sand at his feet, whereupon he saw a bubble, then a clam, half buried. The clam began to open its valves and out of it came a noise like a sigh. Raven stooped forward, listening, and a small face, the first of its kind, with two round eyes, burst forth, and then withdrew from fear.***

***"Whah!", called the Raven in a whisper. The tiny face moved out a bit, stretched its neck and looked up, then pulled itself back into its shell. Another voice soon came out of the clam, as the Raven was still listening. "Whah! Come out!", whispered the Raven. A second little human face, with wonder in its eyes, burst forth, and then withdrew from fear.***

***More voices came out of the half-opened clam-shell, and then human faces appeared one by one, in a row. A few had eyes gazing, necks slowly lengthening and unfolding and spreading out; the remainder simply appeared, smiling. And a horde of tiny people — men, women and children — finally stepped out of the open valves, and spread round the island. The Raven looked on and sang a new song, for he was well pleased with his work. He had brought forth the first people on the island.***



nature. It followed that if each animal species became distinct from all others, then man must also be distinct. But this distinction was not considered a separation from the natural world. First and foremost, the unity, the oneness of all things was the font from which the native philosophy flowed.

To these people there was no such thing as emptiness anywhere. Every object was alive with spirits — the forests, the mountains, beaches, rocks, waters, even the nearby reaches of the sky.

They had no written language but did possess an exceedingly rich oral tradition. The complexity and imagination reflected in their stories, myths, and legends mirror a confidence in the glory of the spoken word which is nearly lost to us who have only the experience of a written tradition.

Fortunately, early explorers as well as anthropologists recorded from tribal elders many fanciful tales. These stories do not necessarily reflect origin concepts or tribal history, but do give clues as to the peoples' feeling of deep kinship with nature — a primary recognition of *essence* which existed within all things — including man.

## WHY THE CEDAR TREES FLOURISH ON THE QUEEN CHARLOTTE

*In the long ago when the great Tetl, Benefactor of Mankind, was seeking a fair land where the Haida might dwell, his friend Butterfly hovered all the time around his head as Tetl flew along. And when they came to the islands, where the Haida now live, Butterfly alighted on Tetl's shoulder and pointed with his proboscis to the good land and said, "Where the bear is, there are salmon and honey, herbs and berries; there also is good living for men."*

*As soon as the Haida came to this land of peace and plenty, alas, they began to quarrel. Then came down the Great Tetl, and told them unless they lived in peace they would be destroyed. Then they prayed to be permitted to try again.*

*Alas! Evil deeds and greed soon returned. Then the Great Spirit said they would suffer the punishment they deserved.*

*A thick darkness descended on the fair land, and lasted many days. Lo! When it lifted all the people had become huge cedar trees and a voice was heard saying: "When men who can live in peace among themselves come again to occupy this fair land, it is from these red cedar they will hew planks with which to build their homes and from their trunks they will make canoes. From the fibres they will weave their clothing, and from the roots they will make their baskets and mats: in the springtime from the inner bark they will get food."*

*Thus from evil came great good, for the cedar trees can furnish all men's needs for his daily life.*

The basic social unit of the Northwest Coast Indians was a local kinship group. The following categories embrace the various methods of determining group organization:

matrilineal — formal stress on kinship ties traced through the female line.

patrilineal — formal stress on kinship ties traced through the male line.

bilateral — formal stress on kinship based upon both paternal and maternal reckoning of descent.

Each group, being autonomous, had its own chief, owned its own land and wealth goods, and administered its own justice.

The hierarchy within these societies has been likened by western man to a "class" or "caste" system. There are major differences.

For each autonomous group the grada-

## PLAY-WAY

The smallest boy's eyes sparkled. He glanced at his taller brother, at the other boys and girls lined up for the bear race, and he knew he could win. He and his brother had watched Bear from afar, but he had pretended to be Bear so many times.

The Chief himself was judging this race. There! The signal to go! Dropping their hands to the ground the children advanced.

The smallest boy was swift — but so was his brother. He must remember . . . left hand right foot together . . . just like Bear. Left foot and right hand together . . . hands touching ground . . . He forgot! Head swinging from side to side . . . shaggy bear's head. Faster . . . faster . . . there! He was over the line! Just before his brother!

The smallest boy straightened up. He was first! The Chief waited for those clumsy friends who couldn't walk like Bear without falling over, and for the slow ones who were finishing last.

With pride the smallest boy watched the Chief come toward him. But the Chief placed his hand on the shoulder



tion in rank, from chief down through nobles to least and common persons, was so subtle and the delineation so minute that specific lines of division defy western concepts. With the exception of a few captive slaves, each member of the group was related, descended from a common ancestor or ancestress. Each individual was respected and honored as a distinct member of a kinship society and played an important role in group rituals and Potlatch ceremonies. Because of the foregoing there was no exploitation or oppression of those of lowly birth.

Land for habitation, the hunting and fishing rights, crests, medicines, ceremonials, songs, and articles denoting wealth such as special canoes, elaborate carvings, copper plaques, blankets and houseposts, belonged to the group in common. The chief, while held in reverence, acted primarily as administrator of the group's wealth. Although individual wealth could be accumulated, it was available should a group need develop.

At birth the precise rank of the parents determined the child's place in society. A child was reared to fill his special place. Tribal songs and chants impressed a child with his or her social role. The games children played developed skills for individual and group survival. Children attended and took part in the dramatic, exciting, exhausting Potlatch ceremonies.

From birth to death, each had a place. Each was included.



of the smallest one's brother. Then the Chief turned to the smallest one:

**"The play-way is important . . . more important than the speed. I saw no Bear. Only a small boy playing Bear. You must know Bear very well. Not only the way he walks, runs, his scent, the look of his tracks. You must stand in the wind so he does not smell you . . . to stand so still he cannot hear you. When you learn this and much more, some day you may be a great hunter."**

The small boy felt sorrowful. His brother came up beside him. **"Tomorrow you will go with us to the forest." The forest! That meant he could join the older boys! He could learn to play the tracking game, the stalking game, the listening game. He shivered with anticipation. Someday he would go alone into the forest — some day.**

### A CHIEF'S SON

The young Chief's large, timbered house with its carved, painted houseposts was astir with excitement. Only that morning a canoe with messengers had sped over the bright waters and brought an invitation to a Potlatch. The Chief's wife smiled down at her young son . . . her firstborn. But the time of the coming of Little Sister of the Moon he would be old enough to attend the Potlatch. Rocking the baby in her arms she sang him the cradle song of the house of the Raven — the song of one destined to be great.

*Are you the only one who sits  
looking about?*

*You are the only one fit to get  
all your grandfather's timbers  
out of the wood.*

*Chiefs highly moving around,  
Highly moving around,  
Chiefs highly moving around.*

*You are becoming great,  
you are becoming great.*

*You are moving so greatly as you sit.*

*You are moving highly as you sit.*

*You are becoming great,*

*You are becoming great,*

*You are moving so greatly as you sit.*

*You are moving so highly as you sit.*

*You are moving so greatly as you sit.*

The young Chief nodded approval of his wife. The delicate tattooing on her body and face marked her as a high-born Haida woman. In his mind echoed the song, once sung to him, which he would sing with pride at the coming Potlatch.

*Be careful of the child, be careful.*

*This is going to be a great man.*

*His face will be changed*

*wherever he may be,*

*when he looks for the coming*



*of his powerful grandfather  
and sees him!  
Be careful, this is going to be  
a great man.*

The song brought back deep memories of the Potlatch given by the young Chief's own father many many moons before. Twenty days of dancing, feasting, ceremonials. The great house massed with kinsmen and guests . . . the dying throbbing sound of the drums, and the Speaker, the ancient man whose words seemed to come from the wind, the waterfalls and ebbing of the tides. His words had hushed the crowd and remained in the young man's heart:

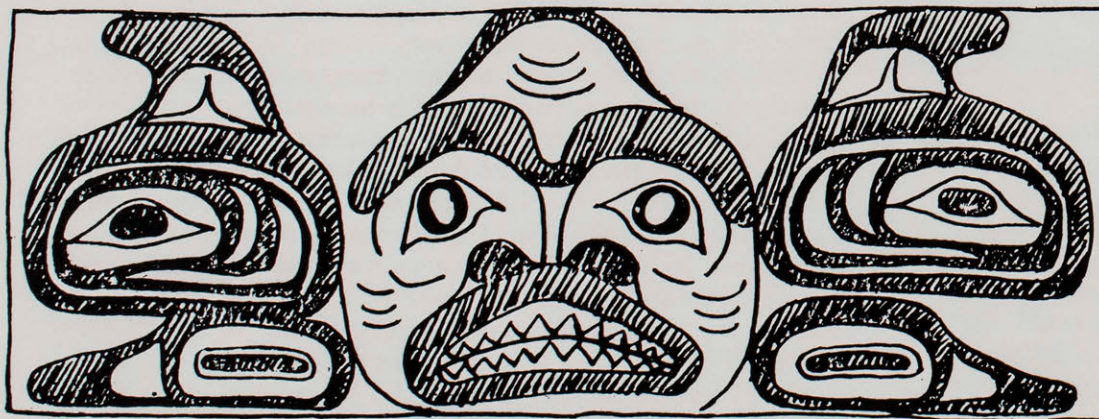
*There is a lot of good in every man. This is our teaching. We believe it, you and I. We do our best to set the example for the young to see, to observe and to follow if it be in their hearts to do so. It is said that the child will grow up to be like father, like mother, like aunt, like uncle, because these people are nearest and thus dearest to him during his growing period.*

Moreover, to children these are the most important people in their lives; these are the people they will most likely want to be like when they grow to be men and women.

If it is so, a child is the shadow, the image, the reflection of the father, the mother, the aunt, the uncle. Thus our teachings, our tenets, require of us to set a good responsible example, not only when we gather together as now when all eyes are cast in our direction, but on all occasions during the entire growing period of the child.

It is said that one cannot deceive a child. It is said that he will grow up to be like those he has observed during his growing period. Thus it is no use to be good, to be generous, to be patient only when the eyes of people are cast upon you — you must be all these things and more when your own child's eye is cast upon you.

The young Chief looked upon his son. Now he truly understood the words of the old speaker . . . the wise words of his ancestors.





One of the most spectacular Northwest Coast activities was the whale hunt practiced primarily by the Nootka of lower Vancouver Island and a few Olympic Peninsula tribes. The chief was usually the whale harpooner, possessing ancient ritual knowledge and developed skills, wealth to have a whaling canoe built and the means to outfit it.

A lengthy period of ritualistic observance, including fasting, continence, prayers and chants was practiced by the chief and his wife as well as by members of the crew. However, it was believed that ultimate success depended to a great extent upon the chief's wife and her meticulous observance of a ritual during the actual time of the whale hunt.

A sliver of sunlight pierced the plank walls and struck open the eyes of the woman. She had lain immobile since her husband left, his face painted black as the night. Now it was dawn and the Chief's principal wife breathed so quietly. She must not move, she must lie still as one dead, as still as the whale must be for her husband and his harpoon, for by her movements she helped control the movements of the hugh, grey creature of the depths.

Her mind went out to the waters, seeing the men, faces painted black, naked except for their wide hats, and silently — oh, so silently — paddling over the great waters in search of a 'Noble Lady'. To call the creature by its own name during whaling season would be taboo. A shudder ran through her. A Noble Lady had once thrashed a great grey tail and smashed a whaling canoe. The woman's brother and his whalers had been cast to the demons and monsters beneath the sea. But her husband was stronger — his magic was sure. The long, twenty-foot harpoon with shaft of yew wood and great tip blade of mussel shell would find its mark.

She lay still . . . very still.

The six men in the whaling canoe rowed silently — searching the black waters. For four days, while performing the arduous whale-hunt rituals the Noble Ladies had splashed and played in the shallow waters of the bay. But to interrupt the rituals might anger the ladies and send them away, so they had waited until now.

Suddenly the waters seemed to part — a great grey mass appeared. The red cedar canoe slipped and danced on the watery swells. The hunters' faces were wet with the Noble Lady's spouting. Fortunately she had come up from the left side of the canoe. Their forty-fathom harpoon line and its four inflated sealskin floats were coiled in two parts that could only run over the starboard side.

The Chief stood tense, toes curled over the gunwhale, facing the mountain of grey. He lifted the harpoon horizontally, high over his head.

Breathing softly, not moving, the Chief's wife summoned the great whale into her mind and heart. "Noble lady, you have come to honor us, to bring meat and oil from your body. Let us welcome you with ceremony and song." And now the Chief's wife could see in her mind the welcoming ceremony. The whalers rounding the point of the bay with their great prize. People on shore shouting and chanting. Visiting chiefs and nobles, in their finery, sitting in places of honor. She, the wife of the Chief, would call out: "Oh, Noble Lady, welcome to our village. I bring you sweet water and sacred food!" This would be followed by pouring sweet water over the dead whale's muzzle and sprinkling its back with sacred eagle down.

How busy would be their brothers, passing out blubber knives of mussel shell; village women assembling cooking boxes to render the fat with hot cooking stones;







men and boys erecting a sturdy rack for the Chief's own cut of blubber; slaves bringing firewood. And then the Chief, in yellow cedar-bark robe, his freshly-greased hair sprinkled with eagle down, would relate stories of his family's whale-hunting beginnings. After that the slicing, cutting and giving away, in order of rank, the body of Noble Lady.

The steersman watched intently as the whale's flukes nearly grazed the canoe. He called out. Immediately the first starboard paddler touched the Chief's leg with his paddle. Pivoting at the waist, the Chief thrust the harpoon at the whale with all his strength. It hit its mark . . . just behind the whale's flipper. He dropped to the bottom of the canoe as the harpoon shaft rolled crazily with the whale's gyrations. Lunging forward the whale carried the harpoon line and its four sealskin floats over the side. The Noble Lady's struggles churned the waters white. The canoe crested, dove downward . . . crested, then downward with sickening speed as the paddlers strained to keep their bark afloat.

At last the yew shaft of the harpoon parted from the barbs. Then a second harpoon was thrust as the mighty struggle continued . . . a third and a fourth harpoon.

Nearby a sealing canoe which had accompanied the whalers recovered the first harpoon shaft and swiftly paddled toward shore to bring back the joyous news.

The voices of close women kin caused the Chief's wife to open her eyes. The harpoon shaft, brought back by the sealing canoe, rested outside the house. That meant Noble Lady was giving herself to the whalers. Now the Chief's wife scarcely breathed. Noble Lady must not escape — or overturn the canoe. The women began a chant. Their voices praised the beauty of the village, the nobility of its people, their long-held desire to honor and welcome this very special Noble Lady.

The sun had set before the whale ceased threshing and floated upon the surface. Oarsmen, nearly exhausted from hours of escaping Noble Lady's violent struggles, dared not yet relax.

With wide, sharp, chisel-shaped blades the hunters approached the floating form, then stabbed until the great fluke tendons were cut. To lessen danger of their catch sinking, the hunters moved the sealskin floats on the harpoon lines close to Noble Lady's head. The Chief took up the killing lance and with sure, practiced thrust drove it directly into Noble Lady's heart.

Into the night waters dove a special crewman who, with mussel-shell knife, cut behind the whale's lower jaw and through the upper lip to tie the great mouth shut. The tow lines were attached. After that, the strenuous task of towing began.





The chant of the women continued into the night. "You will be welcomed, Noble Lady, you will honor our village."

Finally, from without, sounded joyous calls. Bright bonfire flames quickly challenged the dark and released live sparkling stars that escaped into the sky. Hurrying forms dashed shadow-like before the gathering mist. Canoes filled with a neighboring chief and his nobles were cutting the moonlit waters.

The wife arose. Her ritual had enticed Noble Lady. Her knowledge had helped bring an abundance of food and oil to her people. With pride she made her way toward the incoming canoe and its mighty harvest. Rightly she, the Chief's principal wife, would be the one to sprinkle Noble Lady with sweet water, to spread over the massive form the sacred white eagle down.

One of the most misunderstood ceremonies in the entire American Indian spectrum is that of the Potlatch. Altered by the coming of traders, it eventually became an exercise in vulgar extravagance and was for some years outlawed by the Canadian government.

Originally the purpose of a Potlatch was a public announcement of an important event given by a chief and his group to invited neighboring peoples. Some groups, such as the Kwakiutl, provided dramatic entertainment, others were more modest. Primarily a Potlatch provided witnesses to an important event such as a marriage, birth of a potential heir to one of the group's titles, crests and high stations, or restoration to free status of a war captive. A Potlatch was necessary to validate the assumption of hereditary rights and the whole system of rank. It also validated the social rank of the guest groups.

A ceremony usually consisted of feasting, ceremonial recitations, dances, songs, and the giving of wealth good. These goods consisted of plaques "coppers" which were beaten of placer copper, blankets, canoes, oil, dentalia beads, carvings, boxes and other such desirable items.

To accumulate so much wealth for generous distribution might take a lifetime, and it was not unusual for a chief to give but one Potlatch. But whenever given the Potlatch was a culmination of the culture, a joyous celebration of reunion, a time for recitation of historical ethical concepts, a coming together in the spirit of harmony and kinship as well as a means of acknowledgement and distribution of wealth.

Roll, roll back, warm and thick mists . . . there is more, so much more lurking behind that now desolate shoreline of splintered totems and wasting logs.

Life was there . . . beliefs . . . ways beyond knowing.

A drum could beat again . . . a pulse be stirred . . . a voice be raised and a shuffling dancing step begin . . . once more.

The mist lifts. The village works its way from out behind the dim, cool forest. This world is astir . . . today is Potlatch!

And now the guests arrive in ornamental, carved canoes . . . are welcomed on the beach. Songs of honor, speeches proud, and yielding to the warmth of ancient ceremony.

Moon of Little Sister, you have brought the time of glad rejoicing. Together hosts and guests gather in mutual respect to once more recount the stories of the old ones . . . to pass forever on to sons and daughters the proud glory of their past. Boom . . . boom . . . boom . . . the softly-beating drums . . . maidens dancing, bodies young and graceful, dancing the dance of welcome. Kinships rekindled . . . friendships renewed. Clap . . . clap . . . clap . . . songs sung then resung again. Feasting . . . over and over. Salmon, oil, roots, shellfish, game . . . food for all, for more than all.

Boom . . . boom . . . boom . . . the tapping of the drums. A speaker whose voice echos distant thunder repeats the wisdom of the elders . . . the precious history of the tribe.

Within the crowded great house of the Chief there is no day or night. Grey, pungent smoke diffuses senses as strange lights flicker . . . make shadows . . . then are gone. Wild creatures swoop from above. The walls move. Terrifying sounds ring out — a baying of the wolf, the eerie screeches of an owl. Men, no longer men but now gyrating monsters beneath huge, wildly-conceived masks, whirl with abandon. Monster faces — owl-like, wolf-like, eagle-like. Demon faces dreamed by craftsmen. Cries, screams in the night. Children unafraid only in a parent's arms.



Many times does Moon of Little Sister make way for the sun as histories are repeated, rank reinforced, ceremonies performed. And then gifts . . . gifts lavishly given . . . gifts for all — the Chiefs, their nobles, commoners and slaves. Gifts carefully prepared and bestowed properly upon proper rank. Lessons learned from the old: "In your mind always keep the obligations that we owe to honored guests in this House that is your own, to the clan that made you proud to belong." Again feasting, a time to orate, teach, speak an opinion, praise, to look into bright and dancing eyes, to give thanks.

Oh, sing . . . sing once more before the mists roll in. Sing of your glory and beauty and bounteous world. Sing once again.

An old woman sighs. A coldness passes into her bones. Somehow she knows and is desolate.

The mists roll in . . . the mists of history roll in — softly, gradually, but sure. And now the singing is no more.

Elizabeth Wright has been a regular contributor to *TERRA* and has authored scripts for radio, television, and the theater.

#### TOTEM POLES

Totem: — a creature or object associated with one's ancestral traditions.

In the Northwest Coast cultures the term may be applied to:

*Memorial poles* set up in front of a village.

*Portal poles* attached to a house front.

*Mortuary poles* in a cemetery.

Carved posts and beams incorporated into the house.

All were memorials or monuments to an ancestral supernatural being who had used the form of an eagle, raven, bear, or other creature.

#### MAJOR NORTHWEST COAST INDIAN GROUPS

|                                |                               |
|--------------------------------|-------------------------------|
| Haida . . . . .                | Queen Charlotte Islands, B.C. |
| Kwakiutl . . . . .             | Vancouver Island, B.C.        |
| Nootka . . . . .               | Vancouver Island, B.C.        |
| Salish (Puget Sound) . . . . . | Washington                    |
| Salish (Inland) . . . . .      | Washington                    |
| Tlingit . . . . .              | South Alaska, B.C.            |
| Tsimshian . . . . .            | British Columbia              |
| Bella Coola . . . . .          | British Columbia              |
| Chinook . . . . .              | Washington, Oregon            |
| Mahah . . . . .                | Washington, Oregon            |





# ETHNIC ARTS SHOP

## Just arrived from Europe . . . Beautiful Victorian and Georgian Jewelry

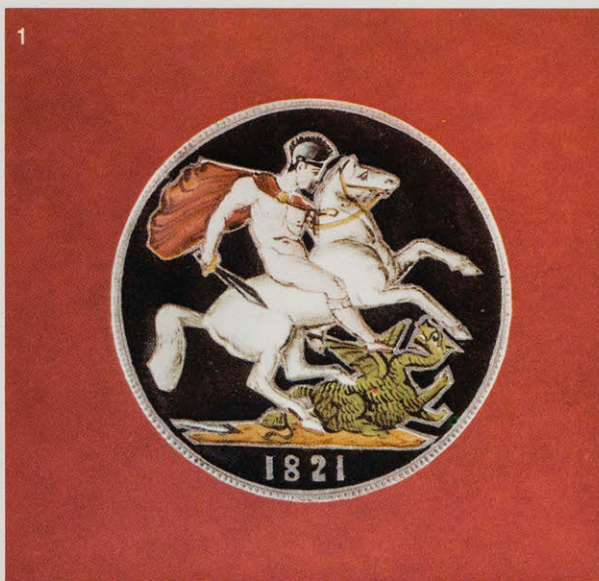
Delicate detail and intricate filigree work denotes this fine jewelry from a bygone era. Come in today and see our collection of pendants, locket, rings, pins, and earrings.

1. Enamel pin of St. George and the dragon on old English coin. \$195.00

2. 15 karat gold pin or pendant with English zircon. \$165.00

3. 14 karat gold pin with black enamel. \$125.00

4. Cameo in 10 karat gold mounting. \$150.00





An aerial photograph of the Popocatepetl volcano, showing its snow-capped peak and the surrounding landscape. The volcano is a large, conical mountain with a prominent crater at the top. The slopes are covered in a mix of snow and dark volcanic ash. The surrounding area is a vast, flat landscape with some distant hills and a few small settlements. The sky is clear and blue.

# Climbing Popocatepetl Mexico's Famous Volcano: Here's How

by Edward C. Wilson

*Wanda Landowska is reported to have remarked that playing Mozart is easy once you know how. Well, so is climbing the nearly 18,000 foot high Mexican volcano Popocatepetl. Here's how.*

On a fresh June morning, I strolled from the Hotel Camino Real into Chapultepec Park and then to the Metro station. For two pesos, I took a train to the Pino Suarez station, noted for its Aztec shrine, and transferred to the train for Tasquena, in the southern part of Mexico City near the University. There I was met in a pick up truck by Shelton ("Shelly") Applegate, the Natural History Museum's former Associate Curator of Vertebrate Paleontology who is now at the University of Mexico, and his assistant, Luis Espinosa. We set out in high spirits, driving east through licentious city traffic. We were off to climb Popocatepetl, a volcano known to us then only from fact and fiction and distant glimpses.

Popocatepetl is a beautiful symmetrical, snow-capped volcano on the southeastern border of the Valley of Mexico. It is 17,876 feet high. The name is Nahuatl (the Aztec language) and means "smoking mountain," which is applicable at times, although there hasn't been a major eruption since 1918. Precolumbian ruins on the northwest side include an altar, shrine, and cemetery. Members of the Cortez expeditions collected sulphur from the crater to make gunpowder in the 16th century. Sulphur was mined commercially from the crater until about fifty years ago, when an entire crew died there and the operation was abandoned.

Every writer who has visited Mexico seems to have written romantically about Popocatepetl, including Richard Halliburton who climbed it twice in 1929 despite a busy schedule for that year which included leaping (also twice) into the Sacred Well of Death at Chichen Itza and swimming the Panama Canal (once was enough). They all recount the difficulties of the "climb," which we found to be a relatively easy walk, uncomfortable only because of the cold and thin air. Modern travel books give out-dated or even wrong directions about the ascent.

An hour-and-a-half after leaving Mexico City, we drove into Amecameca, a former Aztec town now interesting chiefly for its church, hilltop shrine, and marketplace. It is only thirty-eight miles from Mexico City and at a 7,650 foot elevation, only 400 feet higher. We had been told that the crampons and ice axes necessary for the last part of the ascent of Popocatepetl could be rented somewhere in Amecameca. Through inquiries made while shopping in the pul-

*Aerial view of 17,876 foot high Popocatepetl on a morning in January, one of the clearest months for an ascent. Photo by Mary Butler.*



queria "Pepe Hernandez," we located Sr. Luis Soriano Escobar, who has an appliance repair shop at Hidalgo Nr. 17. He also rents mountaineering equipment, operates the "Rescate Alta Montana," and is nationally known as a hooded television wrestler.

We rented three pairs of crampons and three ice axes from the macho Sr. Escobar for a total of 140 pesos. Our advice is to buy your own equipment from a good sporting goods store if you can afford it. Make sure that the crampons are adjusted to fit your boots very tightly and do not have leather bindings. Snow will wet the leather and loosen the bindings, making the crampons insecure, a condition that we later found to be irritatingly inconvenient.

Popocatepetl and its lower sister volcano Ixtaccihuatl are visible from Mexico City on clear winter mornings, but heavy smog makes it impossible to see them from there often in summer. Until a few years ago, all trips to the volcanoes had to be made by horse or on foot from Amecameca. Now a paved road leads from the town, across farmlands, and up through the dense conifer forests that cover the lower slopes to Cortez Pass, and a little higher up the slopes of Popocatepetl. The road climbs through several life zones, beginning with bromeliad-laden pines and ending at timberline in alpine grasslands.

Fifteen miles from Amecameca, we stopped deep in the forest at the gates of the Izta-Popo National Park to pay the six peso car entrance fee. A mile beyond the gates, the road reaches the windswept un-forested grassland of Cortez Pass, which has a handsome monument depicting Hernan Cortez and other conquistadores gazing in awe at their first view of the Valley of Mexico from this historic spot in 1519. From the pass, the road leads south up the slopes of Popocatepetl and in two miles reaches a beautifully forested outdoor campground. A mile beyond, the road deadends at Tlamacas, a place at timberline and at 13,000 feet, which is higher than the summit of Fujiyama. It was snowing lightly.

There are two buildings and a parking lot at Tlamacas. We entered the larger building and found ourselves in a handsome and vast, stone, steel, and glass room manned by an attendant who told us that this was the hostel Vicente Guerrero run by Conopan, the national park service. For twenty pesos each, we bought membership cards which permits us to stay in any government hostel for twenty pesos a night. This entitled us to bunk beds in the men's dormitory, use of the gas stoves in the dining room, and general run of the building, which is large and

interesting. No food is available, but we had brought steaks, cheese, and wine.

For information about the hostel, write the Conopan-Secretaria de Obras Publicas at Nino Perdido no. 661, Col. Narrarte, Mexico City 12.

After storing our gear in the dormitory, we set out in late afternoon light snow and rain to explore the north slopes of the volcano. On the way, we examined the second building at Tlamacas, which belongs to the rescue service, but nobody was there.

For a couple of hours, we clambered around Arroyo Tlamacas and looked at polished and striated rock surfaces left by former glaciers. A great snowy area above looked suspiciously like a small active glacier, complete with upper marginal crevasses. Patches of snow were everywhere and we ate some whenever we were thirsty. Then we returned to the hostel and fixed a cheery dinner. We were the only guests that weekday night, but there often are many people on weekends. Later we sat around a huge fire in a baronial room with the five attendants, with whom we shared our cognac. They agreed to wake us before dawn.

Inexperienced hikers should hire a guide to climb Popocatepetl. The hostel attendants can refer you to some guides. The three of us are geologists experienced in field work and we found the trails to be obvious that afternoon. There are no directional signs, however, like those that clutter na-

tional parks in the United States, although a painting hanging outside the rescue service building shows the major ascent routes.

After a good sleep, we were awakened as arranged, and set off in the freezing darkness with flashlights. The city lights of Puebla shown on the plain to the east like jewels. We had chosen the trail known as "Los Cruces" because it looked easiest on the painting: a long gradual climb across the east face of the volcano and then straight up to the crater rim. Each of us carried an ice ax, crampons, and a knapsack with cheese for lunch. In addition, Luis shouldered a straw mat bought in Amecameca to be used for snow sliding on the descent, Shelly had a roll of rope for emergencies, and I had a camera and light meter. We all wore boots, warm clothes, gloves, and knit caps and carried dark glasses and sunblock cream for use in the snowfields.

The trail is mostly through slopes of coarse ash. The day before it had been soft like beach sand but the rain-wetted surface now was frozen into a hard crust which made walking much easier. This phenomenon was new to all of us. Lava ledges project through the ash, which maintains angles of repose of 30° to 40° on the upper slopes.

The sun rose in glory at 6 A.M. There was a steady light wind. A young, nearly-wild dog appeared from nowhere and left after I



Memorial crosses at the 14,434 foot high "Los Cruces" ledge honor some of Popocatepetl's numerous fatalities. Ixtaccihuatl looms in the background.

The main trail on the northeast slope of Popocatepetl branches into several routes of ascent.



fed her my lunch. By 8:30 we reached El Cruces, which at 14,434 feet is higher than Pike's Peak. It is a ledge with memorial crosses to a few of the people killed on the mountain and a metal refuge building built by the Mexican company Ceneti. Vandals had nearly wrecked the refuge, leaving the door hanging by one hinge, but it did provide shelter from the cold wind and we rested on the cement floor for an hour, although it was covered by ice. The refuge is useful when potentially fatal snowstorms surprise climbers high on the trail.

The view north from El Cruces to Ixtaccihuatl is stupendous. The hostel at Tlamacas lies far below. A light haze was in the air, but the sun was bright. Above us the trail ran straight up the mountain to the snow fields. Straight means without switchbacks, which haven't been invented yet in Mexico. Large, black birds wheeled around the summit and occasionally landed in the snow.

We started up again at 9:30 and in two hours had reached the highest limit of the snow free ash. We were higher than the tops of Mt. Whitney and the Matterhorn. Above us, the snow fields stretched to the white crater rim glistening against the blue sky. Stakes tipped with small orange flags indicated the route through the snow. We sat down in the wet ash and strapped the crampons to our boots.

Suddenly, clouds began to billow out of the crater. Looking north, we saw that Ixtaccihuatl had become covered with clouds moving in from the west. None of us mentioned blizzard as we began climbing through the snow, sinking into our knees in places and using the ice axes as probes and staffs to keep from slipping. Without the crampons there would have been real danger of sliding down the steep, icy slope. Our trouser legs and gloves became wet from the snow and our hands felt frostbitten. It was necessary to rest after every two to three steps and our pulses were racing at 140 to 160 beats a minute. During rests, I saw a lady bug and a spider crawling through the snow and wondered how long they would live. A dense cloud now covered the mountain and we struggled on in a tule-like fog, but it did not snow. Then, we were at the crater's rim, almost 18,000 feet high, but unable to see more than a few feet ahead.

My research tells me that the crater is elliptical in shape, measuring 2,000 feet in one direction and 1,300 feet in the other. The floor is more than 1,500 feet below the crater rim at the deepest part. A rope ladder at least 200 feet long reportedly is needed to descend into the crater, where adventurers are then in danger of being killed by falling rocks or volcanic fumes. We had expected to see the crater and perhaps to col-

lect some sulphur samples for the museum.

Somewhat disappointed, we descended rapidly by the same route. Shelly and Luis slid a little way in the snow on the straw mat, which did not work very efficiently. We hiked back to the hostel and were at home in Mexico City that evening.

Could you climb Popocatepetl? You can if you are reasonably healthy, surefooted, and sensible. It is a natural history feast that should become a major attraction since it is readily accessible from Mexico City and even the views from the hostel are superb. The clearest months are reportedly December through April.

And what did we get out of it? The beautiful experience and a piece of lava for the museum and a straw mat that has an honored place in Shelly's Mexico City house.

But I think that, like Richard Halliburton, we have to do it twice. Anybody want to help three sane men carry a 200 foot ladder up an 18,000 foot volcano?

*Since writing this article Edward Wilson, has climbed Popo another time. He would like to re-emphasize that inexperienced hikers should have a guide along. Dr. Wilson, himself an experienced hiker, fell more than a thousand feet on ice at about 14,000 feet. He was fortunate to walk out with only a cracked rib and a number of painful scrapes.*



*Wet ash may be the only seat for a hiker while he straps crampons to his boots.*



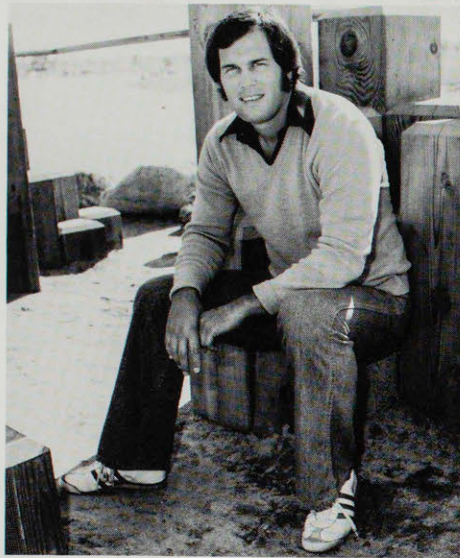
*Trails lead across steep slopes of coarse ash through which lava crops out.*



*Above 17,000 feet, rests may be necessary after every couple of steps. Clouds appeared suddenly over the crater and enveloped us in a tule-like fog, spoiling any view into the crater.  
Far left: Frequent rests are necessary because of thin air. Metal refuge at "Los Cruces" is below the hiker in left foreground.*



# Wildlife Painter Gets His "Kicks" a New Way



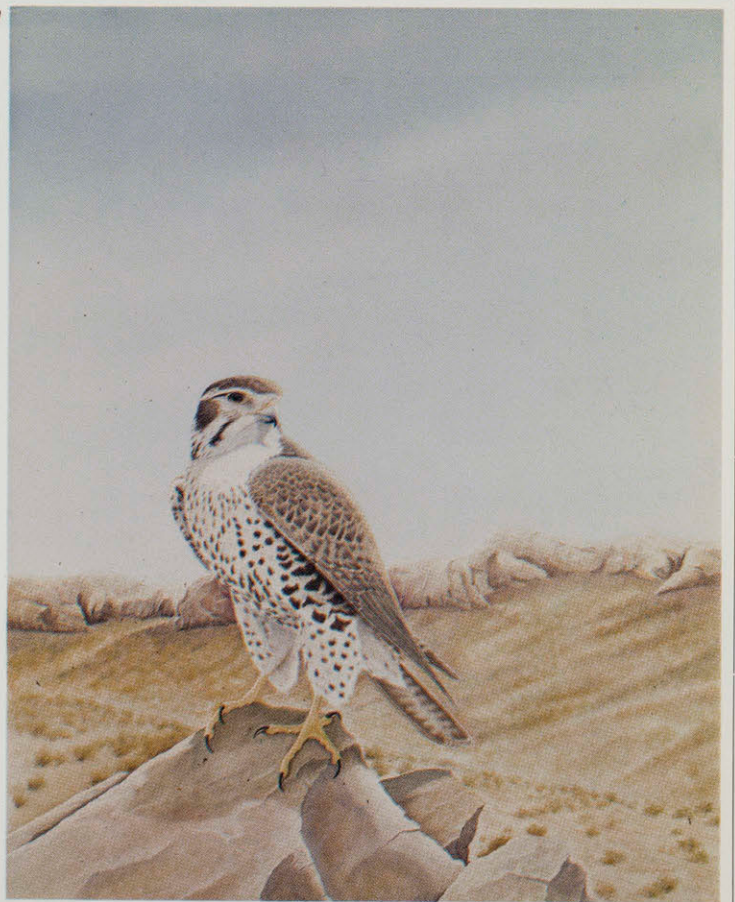
An exhibit of bird portraits by David T. Chapple is hanging in the Ornithology Changing Gallery on the second floor of the Natural History Museum of Los Angeles County, and will remain there through March. Chapple is a graduate of U.C.S.B., where he played football and also studied and painted the birds of the Goleta slough and Santa Barbara area. During this period he spent many hours at the Santa Barbara Natural History Museum, comparing his work to the bird study skins in the museum to be certain of their scientific accuracy. He became well known nationally after graduation when he played pro-football as a punter for the Los Angeles Rams. Between seasons he continued to study and paint birds, and finally gave up pro-football to become a full-time wildlife artist.

While Chapple has had several showings in the mid-California region, this is his first exhibit in a major museum. His mixed media color portraits are scientifically accurate and show a superb sensitivity to animals that can come only through extensive familiarity with them. Life scientists say that Chapple's work compares favorably with the more well-known wildlife artists working today.

20

*Prairie falcon*

*Golden eagle*





Canadian honkers



Wood ducks







# Mightier than the Sword

by Stephanie Shulsinger

and collectible

The moving finger writes, but with what? Many centuries have passed since a human hand first took up a pen, that useful instrument which Cervantes called "the tongue of the mind." Meanwhile the long evolution of writing instruments of all kinds has created a unique collector's item, rich in history and variety but frequently overlooked.

The first writing implement was probably somebody's finger, smudging daubs on a rock with natural pigment found on the ground nearby. Animal blood, soft stone, colored clays and obvious plant dyes were also handy in those early times, and a stick could be used to draw symbols on soft earth. Of course these were pictographs or crude illustrations of familiar objects rather than real writing. The first people known to have had a written language were the

Sumerians, who lived in the Near East about five thousand years ago, and their writing was neatly pressed into clay tablets with a wedge-shaped reed or stylus. This is the famed cuneiform writing, so called from the Latin word "cuneus" meaning "wedge," and it also refers to characters carved into stone with wedge-shaped tools. If the stylus — most likely made of bone — was the earliest real writing instrument, these metal carving tools were not far behind, nor were the reeds which were used by the Egyptians to write on their papyrus scrolls.

So ancient are both of these basic families of writing: that which is formed with depressed or raised characters on a solid surface, and the kind that shows up when some sort of pigment is laid on a contrasting background. Ignoring the passage of time, both are still in use, although letters carved

in stone are generally reserved for monumental art in the hurry and bustle of the twentieth century.

The use of papyrus as a writing surface started a whole new industry in Egypt and revolutionized writing. Wet leaves of this interesting plant, which for a long time grew only along the Nile, were pressed together in sticky layers and dried into a long continuous roll. This stuff was exported all over the known world and served as a principal writing material in both Greece and Rome, along with parchment which was made of animal skins rubbed smooth with pumice. The pens used were reeds fashioned from the hollow stalks of swamp grasses, with a fringed brush-like edge or a point cut for writing, although the Romans also had pen points or nibs made from various metals. The trouble was that metal tips were



scratchy and inflexible, and although they could be made into exquisite works of art, they were miserable to write with.

This problem had many solutions which were destined to sleep for a long time. Meanwhile, somewhere along the line somebody pulled a wing feather out of a goose, sharpened the tip and found the writing implement that served best for over a thousand years. In England it was called a "penne" from "penna," the Latin word for feather, and it was used all over Europe along with variations on the reed and the ivory or metal stylus, which was still employed for scribbling temporary writing on wax-coated boards, an early slate. The other end of the stylus was flat for easy erasing, and this homely apparatus was still popular in Europe about a century ago.

There are countless substances that can make a mark, and in the Orient the favorite was (and still is) ink, made from finely powdered compounds that often contained exotic ingredients: one recipe called for pine soot, mother of pearl, camphor and raw lacquer. Cinnabar, rhinoceros horn or pomegranate peel might be added, and so might powdered jade, the "stone of Heaven" which was considered to be a lucky substance that carried its own blessing. Although reeds were and are widely used, the classic Chinese calligrapher still favors a special soft writing brush carefully molded to a fine point and used in a vertical position. Rabbit hair was common for small characters and sheep hair for bold, but Chinese brushes have been made of mouse whiskers, gorilla hair and even the hair of a tiger — if you dared to catch one.

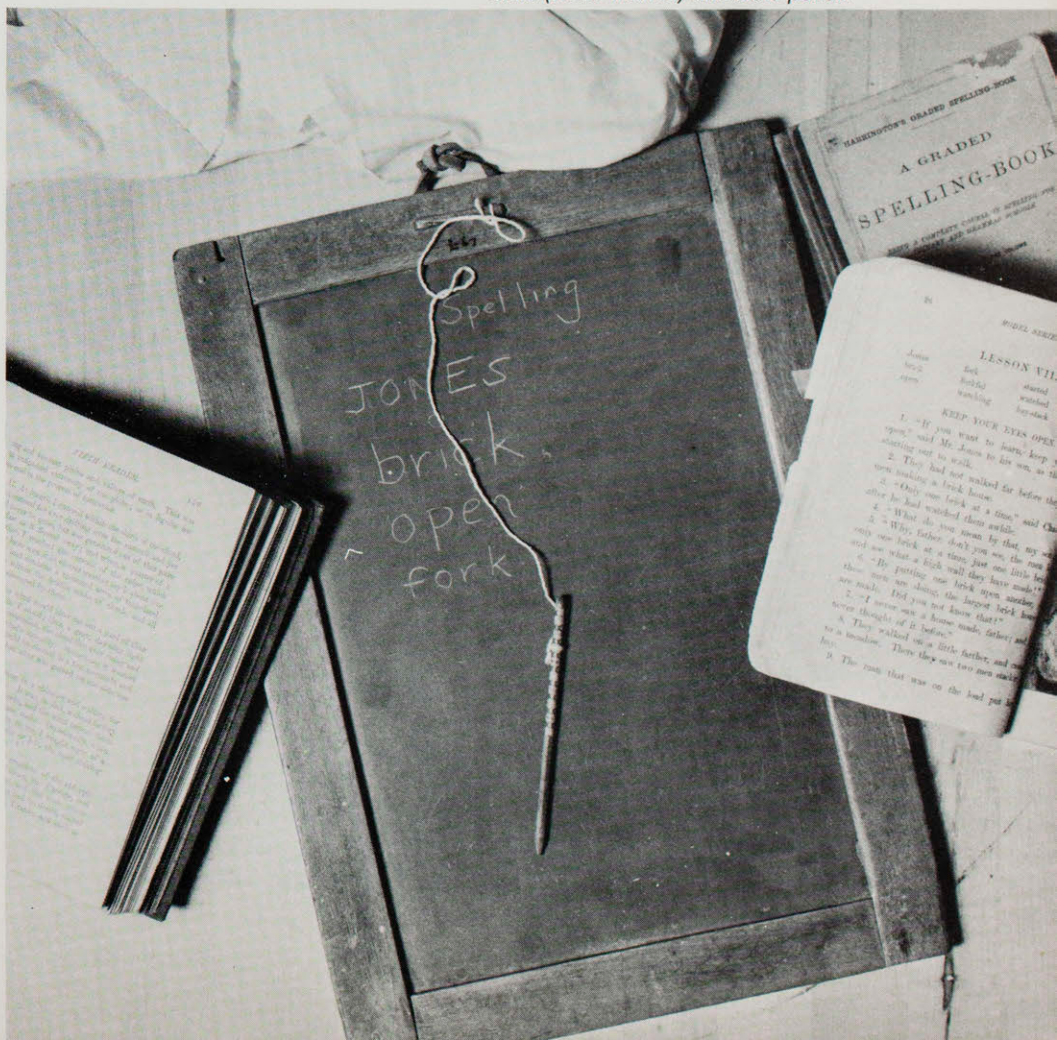
And here is an odd thing: the pencil did not evolve from the pen, as its name and use suggest. Instead it is named for a dainty artists' brush used in some places for lettering. Somehow pieces of graphite came to be known as "pencils," and gradually developed from hunks of what was called black-lead or plumbago into the wood-encased and smooth-writing mechanical pencils we know today. The chemical makeup of graphite was discovered late in the 18th century and this natural compound, which is a crystallized form of carbon, has been in great demand ever since. Many substitutes have been devised, and pencils now contain, in addition to graphite compounds, charcoal, chalks, crayons, and all sorts of other marking devices.

Through the vast passage of years the moving finger wrote with whatever was at hand. The Founding Fathers signed the Declaration of Independence with a quill, and some British business houses had to



Assorted modern writing equipment, pre World War I: inkwell, steel pen points in embossed box, fountain pen, pen holders.

Slate (wood-framed) and slate pencil.





hire one man just to go around sharpening quills for the clerks, who were allowed one a day apiece. But the Industrial Revolution demanded newer, tougher writing implements, providing the incentive for a number of efforts which resulted in a successful steel pen point, arriving after many false starts soon after 1800.

No one can say for sure who invented it: Britain characteristically claims the honor, but so do France and Germany, both charging the British with stealing the idea from them. There are scattered American claims, too, but it was in Birmingham, England, that the steel pen inspired a dynamic and extremely profitable business. At first the price was high and the pens were stiff, but experiments showed that a slit in the tip improved flexibility, and variations on this notion added a tiny round hole at the top of the slit to ease writing. From this the steel pen business grew swiftly and by the time of the Civil War, the goose quill had gone the way of cuneiform and pictographs.

Early steel pens were made from sheets of steel formed into tubes or barrels and shaped to a point. The slit was sometimes cut but might be tooled into the tip, to be hammered open after firing. Quality control was uncertain and later methods brought about considerable improvement in the product along with a welcome drop in price. By 1889, there were 13 firms in Birmingham engaged solely in making pens, for which they used up about 24 tons of steel a week. A highly skilled workman could earn a weekly salary of as much as three pounds, which was a princely wage in those days.

In addition to the steel pens and removable pen points made for holders, there were points made of animal horn or tortoise shell with tiny diamond or ruby tips bound inside with bands of gold. Other materials tried included silver, which was melted down from coin by the American Shakers around 1819 and made into serviceable pens. Gold was widely used for trim and later for the points of fountain pens, which were the next giant step in the development of writing instruments.

Although an inkwell could be highly decorative (as many collectors know), ink was still a messy nuisance to do business with, and ways to store it inside a pen were sought for a long time. Finally during the 1880's production began on the fountain pen, which contained a refillable bladder that controlled the ink flow through capillary action by maintaining a delicate balance of pressure both inside and out. The reservoir was made of vulcanized rubber or glass, and the point had to be resistant to the corrosive elements in ink — hence the use of

such materials as gold, iridium and stainless steel. The cap was designed both to protect clothes in case the pen leaked and to retard evaporation of the ink. The Sears catalog for 1897 offered one fountain pen somewhat hesitantly tucked away among conventional steel pens and holders; featured nearby was sealing wax, a relic of an earlier age. In 1908, the catalog had two pages of fountain pens and by 1922, Montgomery Ward was offering fancy cases and sets in abundance in a wide range of colors, styles and prices. A fine fountain pen was the best there was until the arrival of the ball point pen in 1944.

Today's familiar ball point pen is proof of the old saw that only a very ill wind blows no good. It was at the bloody height of the Second World War that the U.S. Quartermaster-General asked industry to develop a pen that wouldn't leak at high altitudes, with ink that would be resistant to extremes of climate and temperatures. What resulted was a tip that consisted of a rotating ball captured in a socket, constantly bathed in a supply of viscous ink that flowed from a reservoir above. The balls were usually steel 1 mm. in diameter, but synthetic sapphire and other substances were also used. The tremendous success of this clever invention has consigned both inkwells and fountain pens into the category of memorabilia, although old-style steel pen points on holders are still used by many artists. All are highly collectible as are other related things: pencils, slates, brushes for lettering, pen knives, fine papers, ink blocks and even old ink recipes. Typewriters are writing instruments, too, and they are a field unto themselves.

Old catalogs are the collector's best source of information about collectible writing instruments. Of course the prices may sting a little: in 1922 a complete "writers' outfit" was offered, containing a fountain pen with a 14 k gold tip and a glass filler; 4 "lead pencils;" a mechanical pencil; 4 steel pen points with a penholder; a pencil sharpener and a rubber eraser in a handsome box. Price: \$1.48 plus 4¢ postage. Richly chased gold and silver mechanical pencils sold for under a dollar apiece, and a handsome set of fountain pen and mechanical pencil with an initial engraved to order on gold cost \$6.50. Read 'em and weep!

Apparently writing instruments have been interesting curiosities for a long time, as a French publication way back in 1868 noted that a local citizen had in his collection of Roman antiquities a bronze pen found in a tomb. Alas — human nature never improves: this treasure was reported stolen by another collector!

Of course the things written with all these gadgets have always been popular with collectors. In 1971 Sterling College in Sterling, Kansas was the site of an exhibit of 100,000 writing instruments of all kinds, shown by members of the American Pencil Collectors Society. Most major museums, such as the Metropolitan in New York and the Los Angeles County Art Museum, have fine examples of ancient writings (and occasionally implements) on display, and all their inscrutable inscriptions never fail to fascinate, as they carry us back through time, comforted by a sense of the stubborn continuity of human life. The writing of every age remains behind as a mirror, maybe distorted but often the best reflection of what was, and sometimes the only one. But while books have a way of taking over a house, a single glass case or box may contain a collection of beautiful instruments that have scratched out treaties, diaries, death warrants, love letters and literature, changing the course of history time and time again. Omar Khayyam and Edward Fitzgerald mused about all this with special eloquence:

"The Moving Finger writes, and having writ,  
Moves on: nor all your Piety nor Wit  
Shall lure it back to cancel half a line,  
Nor all your Tears wash out a word of it."

*Stephanie Shulsinger is the author of more than 150 published articles on a wide variety of non-fiction topics. This is her first TERRA article.*







Fine letter openers.



Steel penpoints, holders; onyx blotter holder; old glass ink bottle; fancy fountain pens.



Over a century of writing implements: steel point pen to ball point, plus a standard wood-encased "lead" pencil. Note advertising – a collectible feature.



Mechanical pen and pencils, featuring fountain pen and pencil set, large and marbled, in case.

A group of steel pens in fine holders. Note carved souvenir of Pompeii.



# THE INTRICATE WORLD

by Roy R. Snelling



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Fig. 1. Head of ant, *Zacryptocerus setulifer*. Note peculiarly porous appearance of surface. x40

Those of us who study insect classification are limited by our ability to see the beasts in detail under a microscope. Magnifications over 200 times are usually impractical for studying surface detail, because things become increasingly "fuzzy" and it is ever more difficult to interpret what we see, or think we see.

The study of transparent, ultra-thin sections is quite an improvement, for we can see up to about 2,000 times.

But we now have the scanning electron microscope, or SEM, with which we can examine surface features with wonderful clarity and depth. The SEM can generate images at magnifications over 50,000 times! But you don't just stick a specimen under the microscope and look; it's a bit more complicated than that.

The specimen to be viewed is first affixed to a metal stand or platform, utilizing a special electrically conductive adhesive. It is then completely dehydrated in a vacuum chamber, and subsequently coated with a very thin layer (only a few molecules thick) of vaporized gold, gold-palladium, or other metal. Now, it is ready for the microscope and is placed in a vacuum chamber.

Once the chamber is evacuated, things start to happen. A special filament at the top of the SEM generates a very fine beam of electrons which is focused on the specimen. The beam is scanned across the sur-



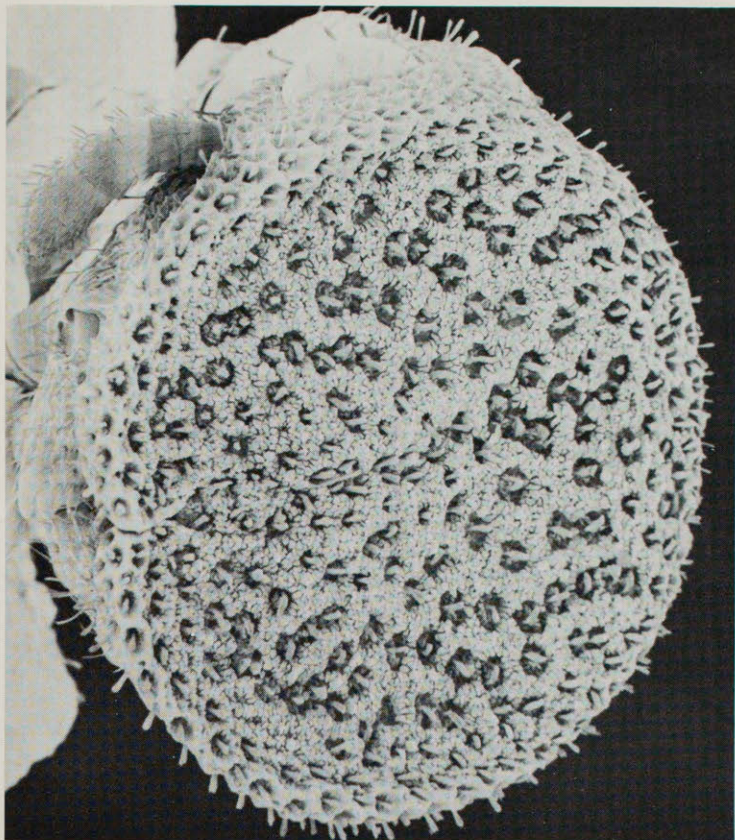


Fig. 2. Another view of the ant, *Zacryptocerus setulifer*. x40 (see fig. 5)

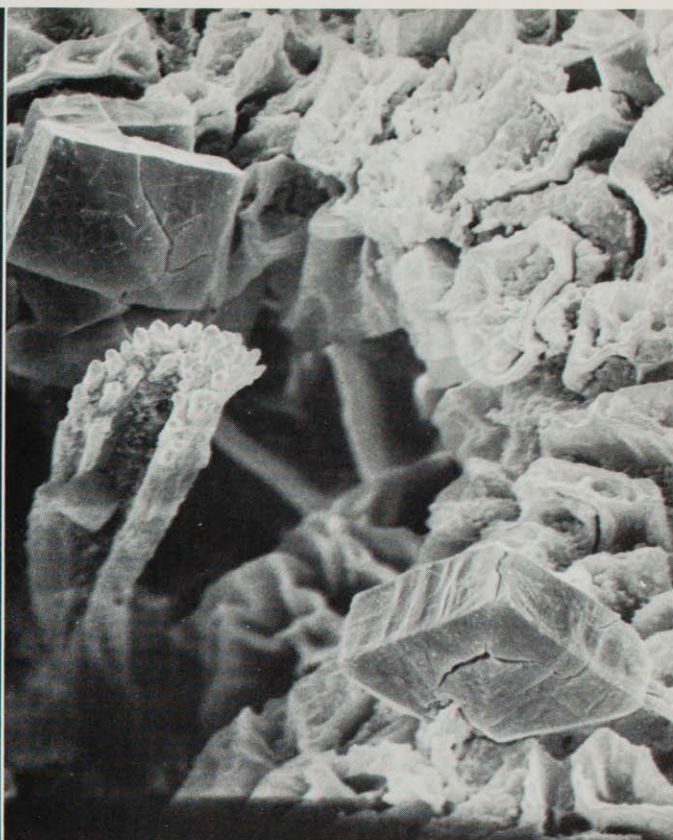


Fig. 3. Surface of head of *Zacryptocerus setulifer* showing scattered calcium carbonate crystals. x100

face in a series of steplike passes until the entire surface has been exposed to the beam. Wherever the beam strikes, electrons from the metallic coating are knocked free; the number of ejected electrons ("secondary" electrons) is determined by the angle of strike between the generated beam and the surface. A direct, broadside "hit" sends off more secondary electrons than does a "hit" at an acute angle. The constantly varying stream of secondary electrons is picked up by a signal detector, then amplified, and transmitted to a TV viewing tube. The picture tube provides a perfect replica of the specimen. The signal can also be routed to a photographic plate producing a permanent record of the specimen.

The series of photos (figs. 1-5) shown here were of special interest to me, for it demonstrated another capability of the SEM. I wanted to examine the head of the ant *Zacryptocerus setulifer* (fig. 1). In the process, some strange crystal-like structures were seen (fig. 3); at higher magnifications they still appeared to be crystals (fig. 4). The SEM operator, Mr. Garner, of Scanning Electron Analysis Laboratories, Inc.,

then pulled a new trick. By throwing a few switches and playing with a few dials, the electron beam was replaced with an X-ray beam which was hooked up to a computer. A few minutes later, the computer spewed out a sheet of paper with a list of all the chemical elements present in the crystal in their relative abundance! These crystals appear to consist of calcium carbonate.

Then, another new trick. Still using the X-ray beam, the machine was set to scan the entire head. After a few more minutes, we had a photo of the results, with a white spot at every point on the head where one of these microscopic crystals was present (fig. 5). They were concentrated around the highly modified hairs of the head. These hairs seem to arise from pores. Apparently the calcium carbonate is secreted by the pores and, by capillary action flows up the length of the hair to the tip where the crystal grows as the solute vaporizes. When the crystal becomes large enough, it apparently breaks loose, but adheres to the head surface near the hair. At this point I have no idea what this is all about; such crystals have never before been reported from ants so we are seeing a new discovery.

The photos on the following pages are only a glimpse of the world of the SEM. I constantly marvel at their clarity and depth, as well as the intricate beauty of the structures revealed. While naturally occurring structures are not supposed to be "art," (for "art" is man-made), I find them aesthetically very satisfying. But, then, I enjoy the art of M. C. Escher, too!

The SEM requires a whole roomful of sophisticated equipment and expensive hardware; at this stage, the Natural History Museum doesn't have one.

The photos included with this article were generously provided by Scanning Electron Analysis Laboratories, Inc. of Los Angeles (SEAL). Many exciting hours were spent examining specimens under the enthusiastic guidance of Mr. Gerald E. Garner. So, if you enjoy these photos, don't thank me — thank Mr. Garner and SEAL. I do.

*Roy Snelling, Entomology curatorial assistant at the Natural History Museum, is particularly interested in social Hymenoptera, the ants and the social bees and wasps.*



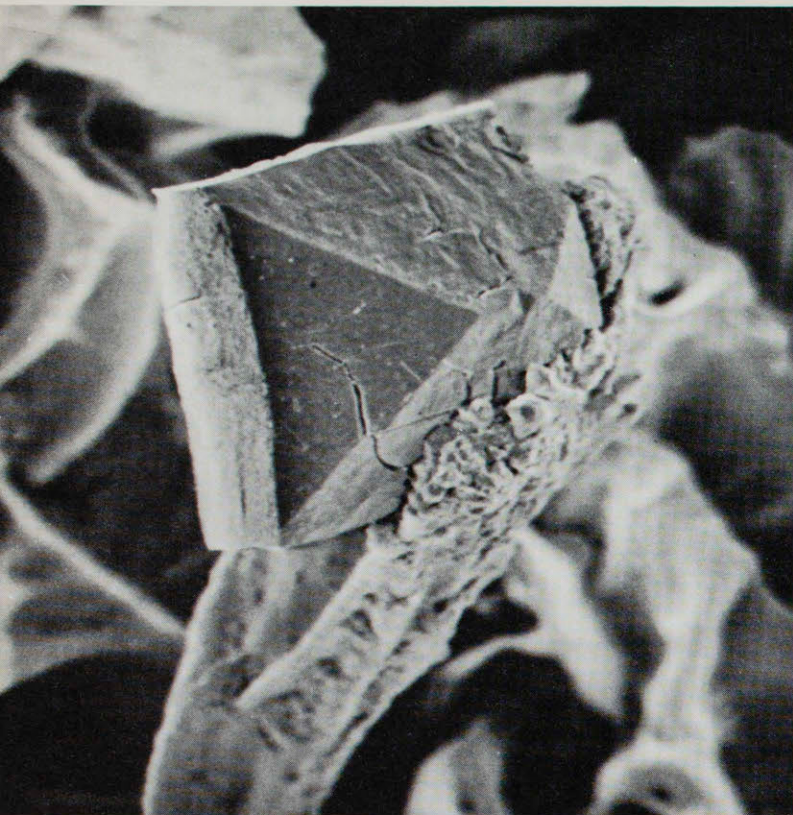


Fig. 4. Detail of crystal growing at end of seta.  
x2500

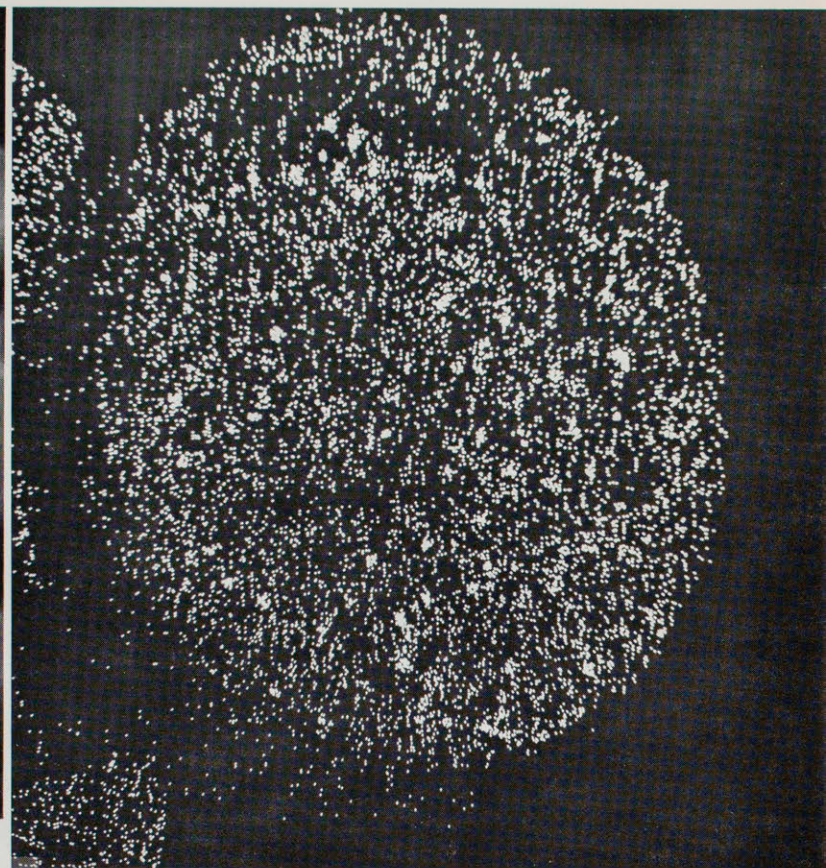


Fig. 5. X-ray map of crystals, same specimen  
angle as fig. 2. x50

28

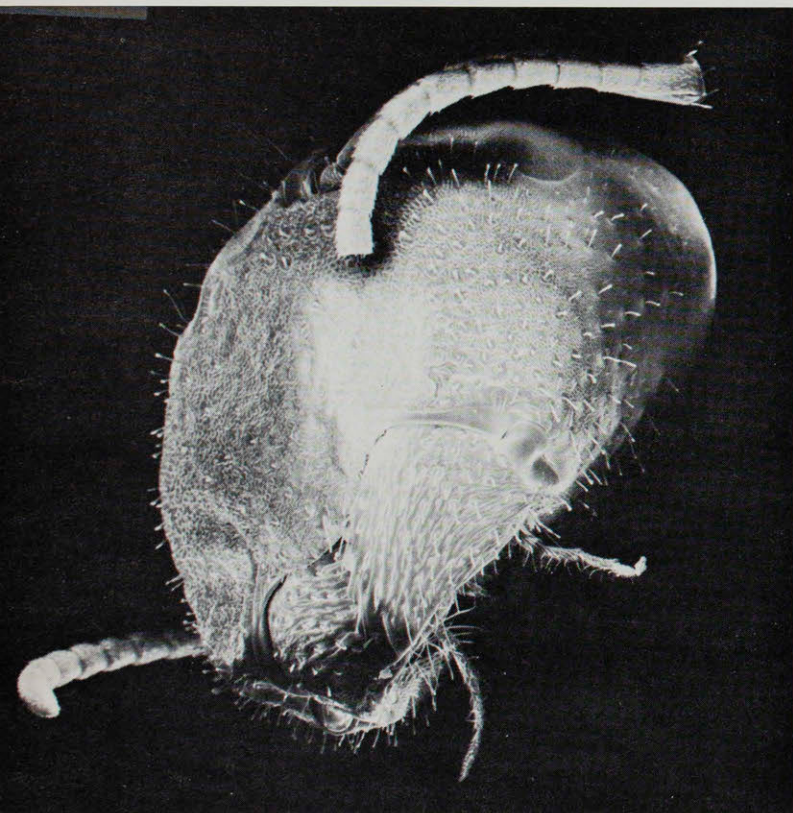


Fig. 6. Head of ant, *Camponotus yoji*. x50

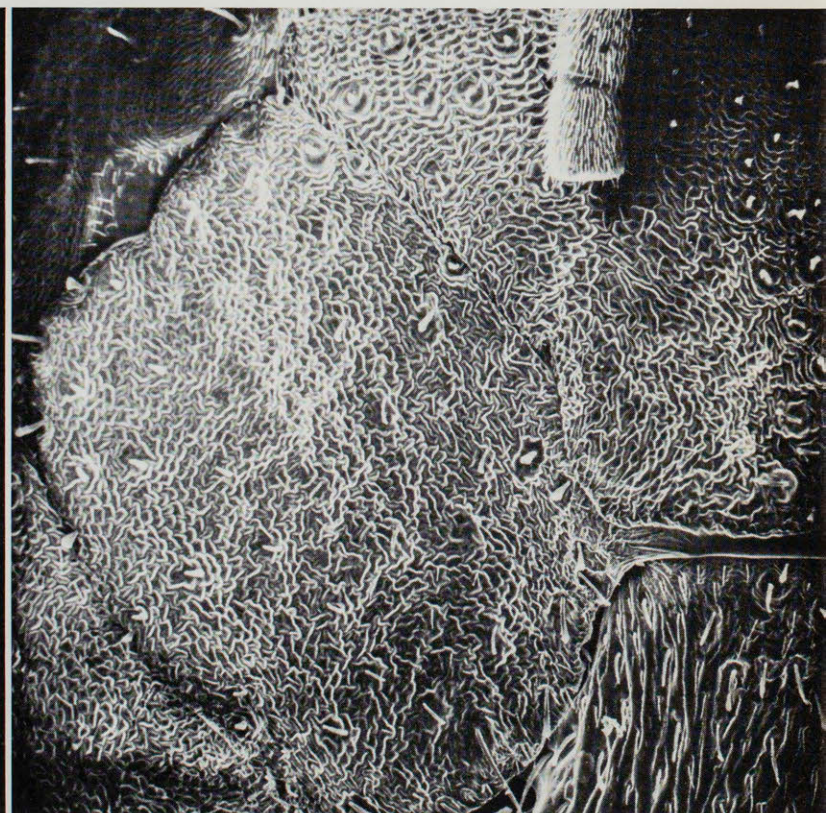


Fig. 7. Closer view of *Camponotus yoji*. x110



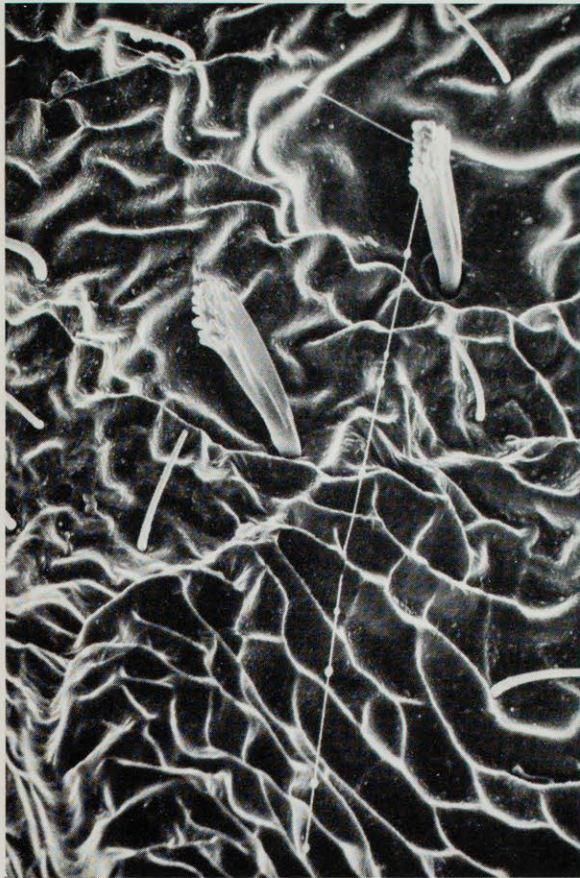
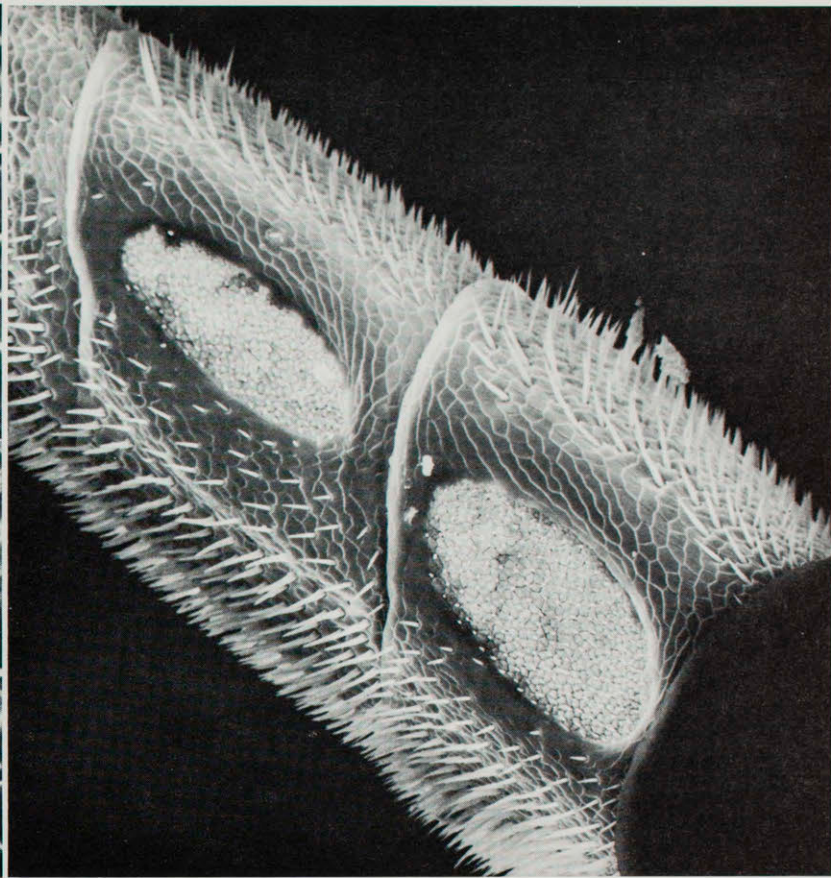


Fig. 8. Still closer view of *Camponotus yogi*, to show surface structure and peculiar hairs. x800



Figs. 9 10 11 12. Sensory organs on antenna of a bee. *Exomalopsis* sp.

Fig. 9. x400

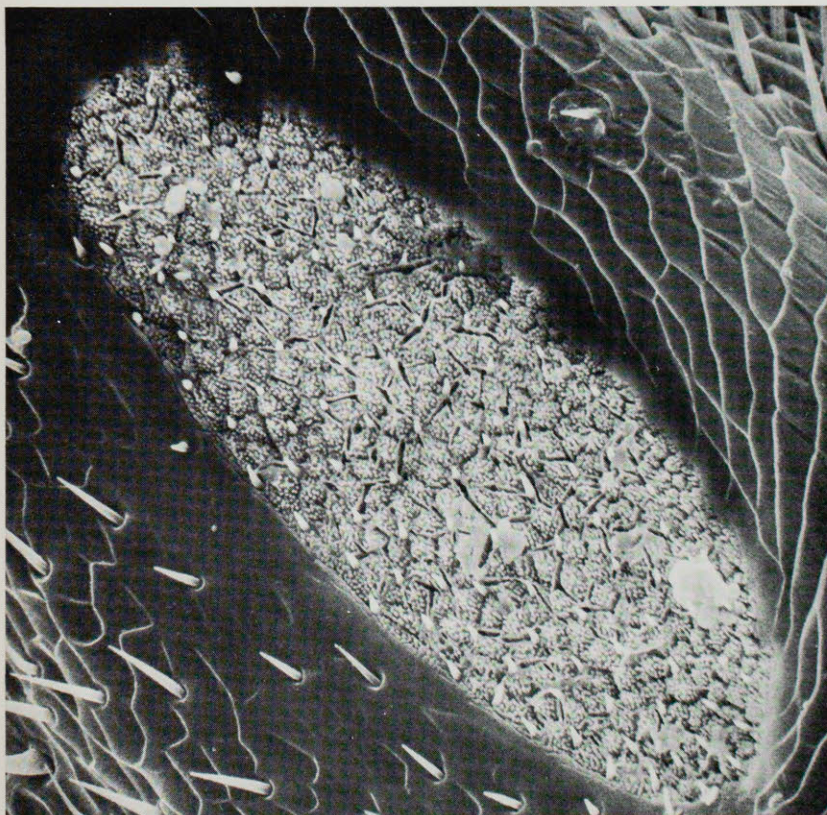


Fig. 10. x1500



Fig. 11. x5000





Fig. 12. x20,000

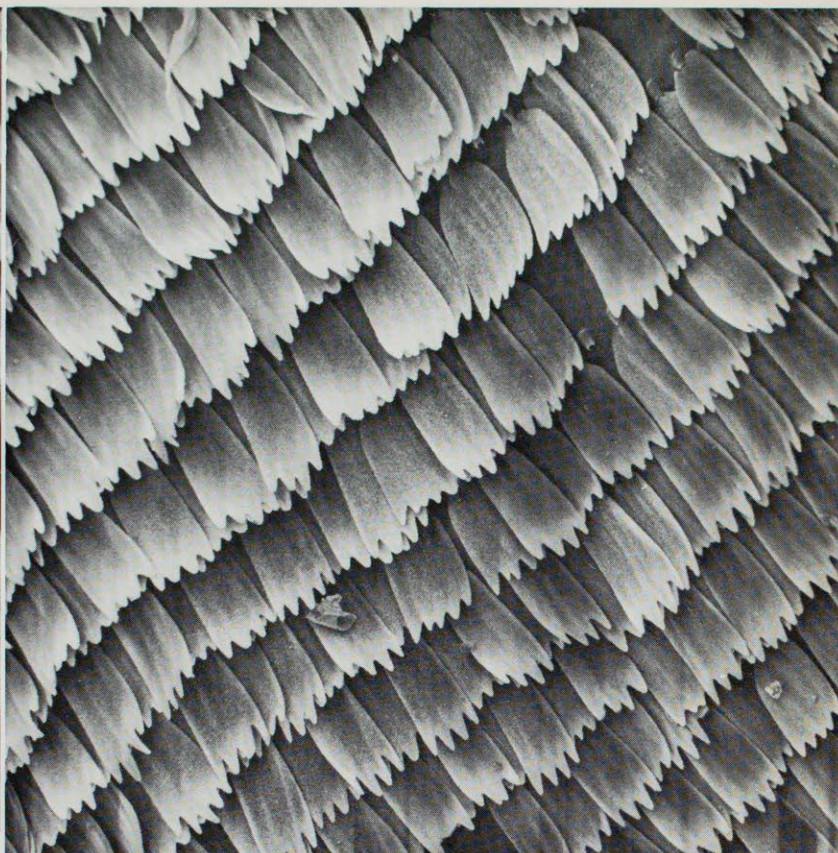


Fig. 13. X80

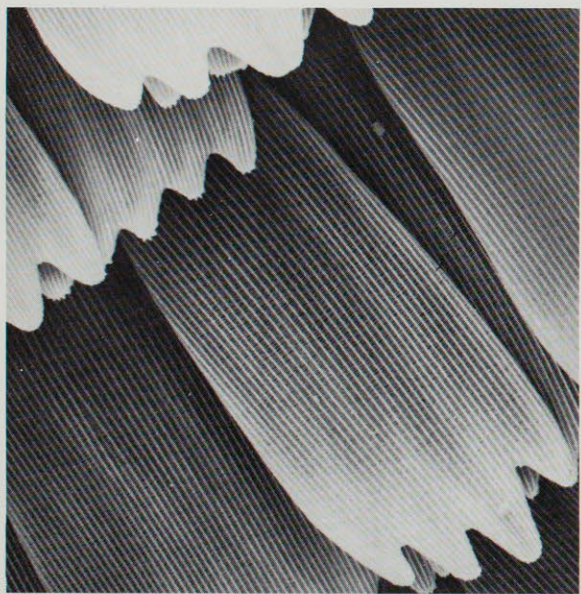


Fig. 14. X400

Figs. 13-14-15-16. Scales on the wing of butterfly.

Fia. 16. X10,000

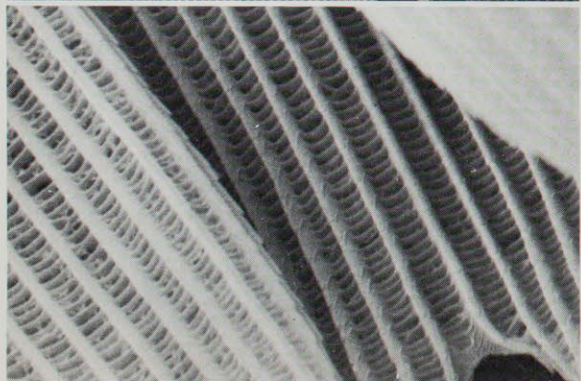
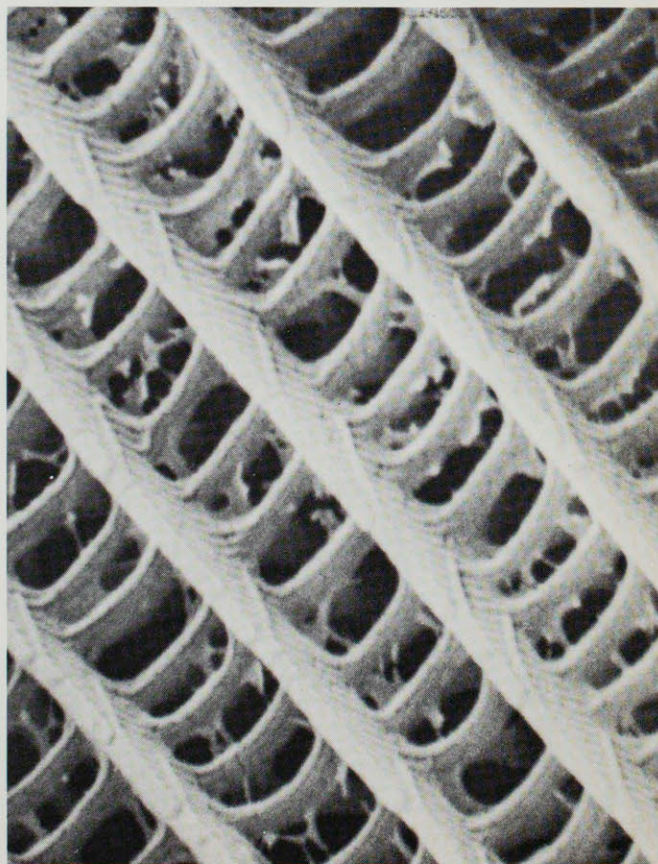
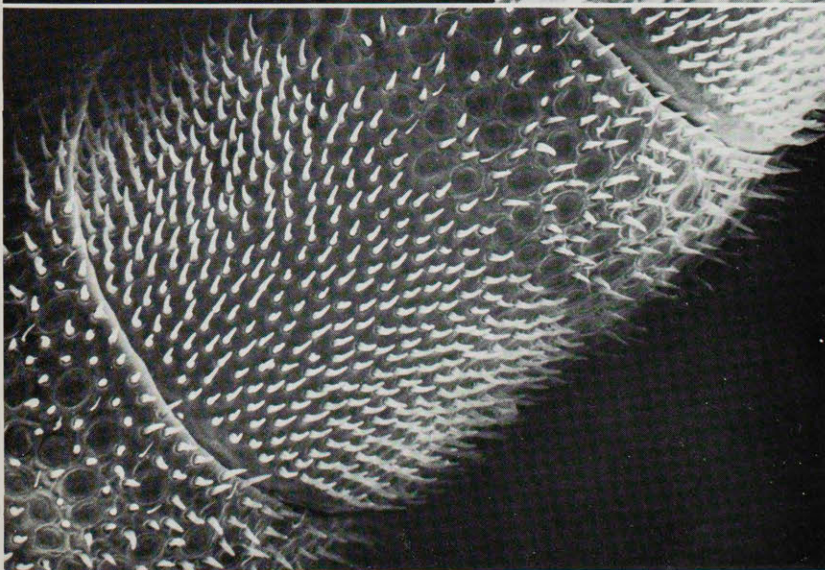
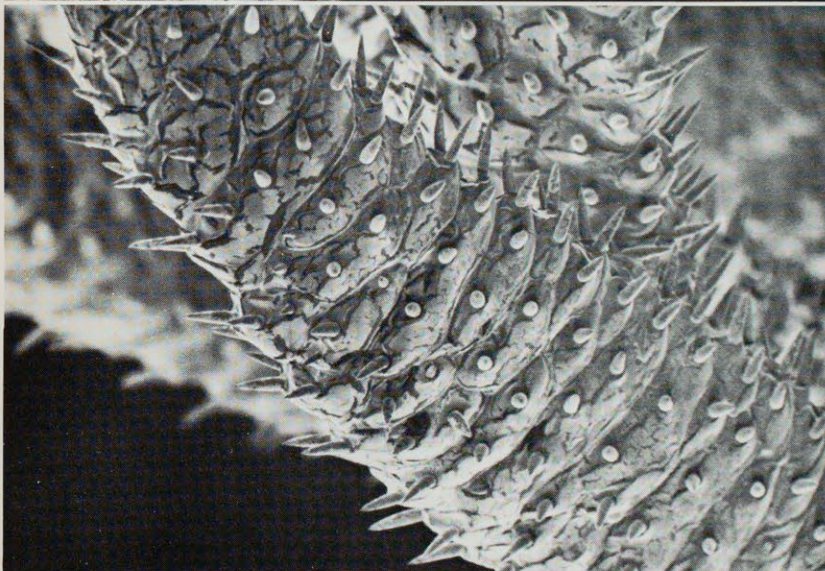
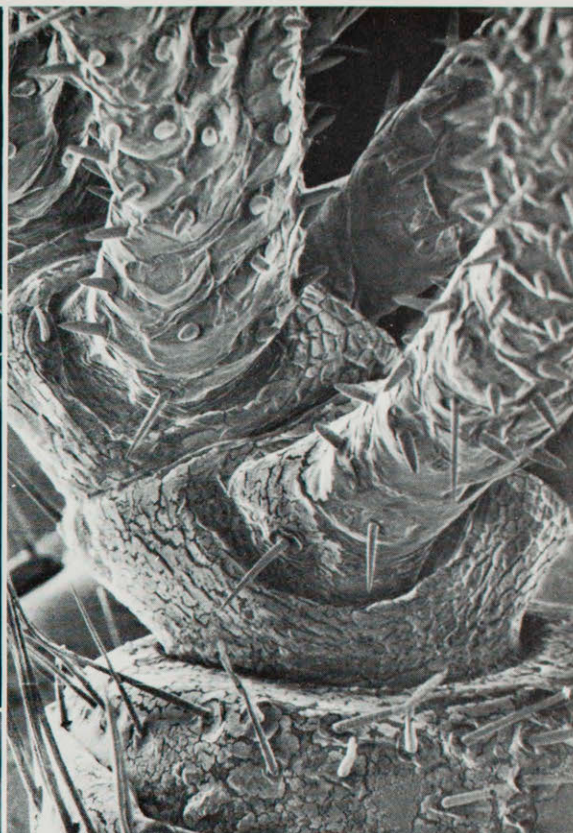
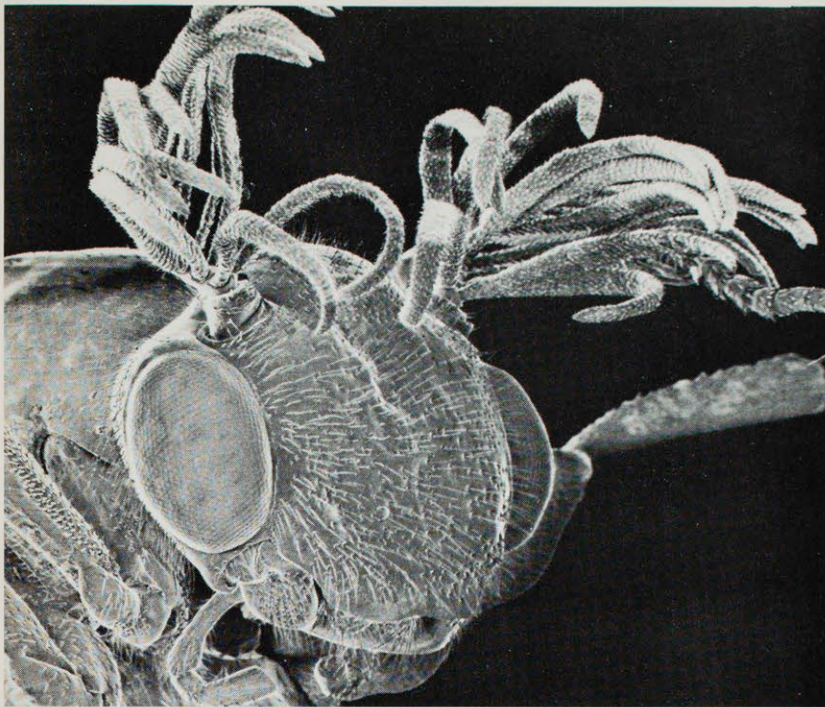


Fig. 15. X2000







Figs. 17-18-19. Parasitic beetle, *Rhipiphorus sexdens*.

Fig. 17. (Upper left) Head of male, X30.

Fig. 18 (Upper right) Base of antenna, X400.

Fig. 19. (Middle) Antennal surface, X400.

Fig. 20 (Lower left) Close up of one segment of sensory pores on antenna of bee, *Hylaeus nunenmacheri*, X500.

Fig. 21 (Lower right) Close up of sensory pores, X2600.





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